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(54) Title of the Invention: Recording/Reproducing Device

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Specifications

1. Title of the Invention

Recording/Reproducing Device

2. Claim

A recording/reproducing device characterized by comprising at least two pieces of recording/reproducing equipment, a control circuit which controls the respective mode of each of said recorders/reproducers, and a detecting means for detecting the recording period of said respective equipment; and controlling the mode of said recording/reproducing equipment with the control circuit using the data from said detecting means.

3. Detailed Description of the Invention

(Field of Industrial Application)

This invention relates to a recording/reproducing device wherein recorded signals are recorded on respective equipment by mutually controlling at least two pieces of recording/reproducing equipment.

(Prior Art)

Using a conventional recording/reproducing device, it is difficult to reproduce the signals from the desired signal source during recording without stopping the state of recording thereof from the point in time it started.

For example, when recording is to occur while one is away from home by using a timer, the device cannot be brought into a state of reproducing by the time recording thereof has ended even upon returning home or when wants reproducing to occur after recording first starts.

(Problems to be Solved by the Invention)

This invention was accomplished to eliminate the drawbacks of the above conventional recording/reproducing device, and it is an object to provide a recording/reproducing device which performs reproducing during recording, as recording thereof continues, or from the point in time recording starts.

(Summary of the Invention)

The recording/reproducing device of this invention is constituted so that, by mutually putting at least two pieces of recording/reproducing equipment into a recording/reproducing or rewinding mode, when one of the pieces of equipment is video recording, the other piece of equipment is reproducing after rewinding it.

(Working Examples of the Invention)

A working example of this invention will now be described with reference to the drawings.

1 and 2 in Fig. 1 are VTRs that can respectively video record and reproduce; 3 is a control circuit which switches the modes of the VTRs 1, 2 between video recording, reproducing and rewinding modes; 4 is a timer; 5 is a subtraction timer used to set the condition of switching between the respective outputs from the control circuit 3. 6 is memory in which the video recording times of the VTRs 1, 2 are stored. 7 is an operation switch and 8 is an editing switch.

Fig. 2 shows the configuration of the entire system of the input/output changeover portion of the device in Fig. 1. A tuner 9 or video source 10 feeds a video signal for recording use to the VTR 1 or VTR 2 via a switch SW1.

Meanwhile, the reproduced output from the VTR 1 or 2 is outputted to a television 11 via a switch SW2. The control circuit 3 outputs changeover control signals from the switches SW1 and SW2.

The effects of this invention are described next with reference to Figs. 1 and 2 and the timing chart depicted in Fig. 3.

When the operation switch 7 is turned on, the VTR 1 is rewind according to the output from the control circuit 3 after a signal from the tuner 9 or video source 10 to the VTR 1 is video recorded (videotape A). The switch SW1 switches concurrently at this time and the VTR 2 video records a signal similarly (videotape B).

The switch SW2 is further switched and the video output of the VTR 1 is connected to the television 11. The timer 4 is actuated at the start of video recording and counts the length of time until the operation switch 7 is turned on. This length of time is stored as data 1 in memory 6. The amount of the VTR 1 rewind corresponds to the length of time of this data 1.

When rewinding of the VTR 1 is completed in accordance with the data 1, the recorded data 1 is subtracted by the subtraction timer 5 simultaneous to the VTR 1 entering a reproducing operation. When the length of time in which this subtraction timer 5 is "0," that is, the VTR 1 first starts video recording (period of video recording A) elapses, the VTR 1 enters video recording mode, the switch SW1 is switched, and a video signal is impressed into the video signal input of the VTR 1.

Moreover, the switch SW2 is switched and the video output from the VTR 2 is fed to the television 11. Next, the VTR 2 enters rewind mode, rewinds for the length of time corresponding to the video recording B, then enters reproducing mode.

By repeatedly performing the above operation, the VTR 2 or 1 remains in reproducing mode even if the VTR 1 or 2 is video recording; hence, a video signal recorded by the television 11 can be viewed. Moreover, the above operation is continued until the operation switch 7 is turned on again.

An edit mode is described next with reference to Fig. 4.

When the editing switch 8 is turned on, the VTR 1 and VTR 2 are rewind when the period of time is added by the timer 4 (when the period of time corresponds to $((\text{data } 2) + (\text{data } 3) + (\text{data } 4))$ in Fig. 3).

In short, the VTRs are rewind to the point in time the operation switch 7 is first turned on. The VTR 2 subsequently enters reproducing mode and the VTR 1 enters video recording mode, then dubbing from the VTR 2 to the VTR 1 occurs. This is performed for the period of time corresponding to data 2.

The VTR 1 is fast forwarded next at the time corresponding to data 3, the VTR 2 is reproduced, the VTR 1 enters video recording mode, and dubbing from VTR 2 to VTR 1 occurs.

Since there is no free space on the recording medium of the VTR 1 during video recording B, however, after reproducing the videotape A (reproducing A), as shown in Fig. 4, it is necessary to fast forward the recording medium (e.g., tape) of the VTR 1 during the video recording of B (data 2). In short, when editing is desired, the two decks are controlled at the outset in the mode in Fig. 4.

The above control for switching modes is performed by the control circuit 3.

Moreover, although a timer was used as the data for controlling video recording, reproducing, rewinding, and fast forwarding in the above working example, tape counters built into the VTRs 1 and 2 also may be used. The above operation may be controlled by detecting a control signal after it has been recorded on the recording medium when video recording started, ended, among other times.

The accuracy of counting the rewind time is further enhanced by stopping the editing operation without needing to dub a videotape D having data (data 4) that is shorter than the data (data 3) just ahead of it according to the condition for stopping the edit operation.

In addition, although VTRs were described in the above working example, the recording/reproducing device may be another device, such as an audiotape recorder.

Moreover, the same operation, as mentioned above, can be performed even if there are three pieces of recording/reproducing equipment.

(Advantages of the Invention)

According to this invention, as described above, at least two pieces of recording/reproducing equipment are controlled mutually at timings corresponding to the drive times of the recording media; hence, even when the time at which recording starts has elapsed, reproducing can occur from the time recording starts without stopping recording thereof.

Furthermore, one piece of recording medium on which recording occurred can be edited by the recording/reproducing device.

4. Brief Description of the Drawings

Fig. 1 is a block diagram of the recording/reproducing device according to a working example of this invention; Fig. 2 is the entire view of a system to which the device in Fig. 1 was applied; Fig. 3 is a timing chart during a recording operation using the device in Fig. 1; and Fig. 4 is a timing chart during an edit operation using the device in Fig. 1.

1, 2: VTRs; 3: control circuit; 4: timer; 5: subtraction timer; 6: memory; 7: operation switch; 8: editing switch; SW1, SW2: switches

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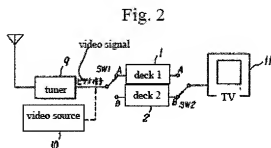
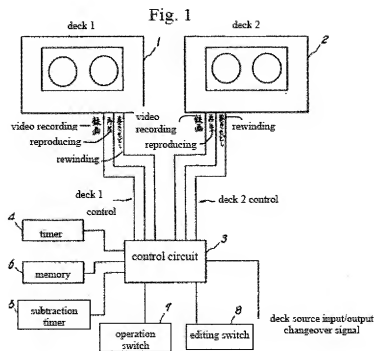


Fig. 3

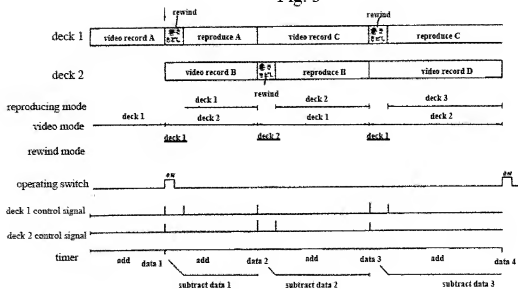


Fig. 4

